

## MATERIALS OF ETHNOGRAPHIC EXPEDITIONS IN UKRAINE MULTIMEDIA PUBLICATION

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Results of ethnographic expeditions of the first half of the 20<sup>th</sup> century are presented on the heterogeneous carriers: phonograph cylinders, music records, travel records, photos. Their investigation allows to get the vast information about the culture, traditions of the certain population groups living in the given region. For the broad circle of researches the access to these materials is connected with practical and technical difficulties: the unique equipment for sound reproduction is needed, a lot of manuscripts are made by pencil and they are easy damaged during repeated usage. Publication of heterogeneous records in multimedia way on CDs has an importance for their storage and including in the scientific turnover. Results of number of ethnographic expeditions in Ukraine materials publication in multimedia way are presented in the report.

### 1. BRIEF DESCRIPTION OF COLLECTION MATERIALS

At Vernadsky National Library of Ukraine is stored one of the worldwide largest collection of Jewish musical folklore. This collection has an enormous value. Its materials generalize the work of several generations of talented researchers - folklore experts on studying Jewish musical culture of Ukraine and (in a lesser degree) Belorus - regions of considerable Jewish Diaspora with traditionally powerful centres of religious and spiritual life. Presently, this collection is a unique, the only one of its kind culture monument which shows so completely in alive sounding not only various palette of Jewish secular folklore but the richest tradition of synagogal singing as well.

The collection base make folklore expeditions materials of Petersburg Jewish Historic-Ethnographic Society in 1912-1914. The idea of expeditions carrying out belonged to S. An-sky famous Jewish writer and ethnography expert and G. Gintzburg sponsor and baron financed it. S.An-sky's colleagues in expeditions were Y. Engel music expert and composer, S. Kisselhof folklore expert, S.Yudovin artist and others.

In 1912-1913 the members of expedition visited Wolyn, Podillya and Kyiv region. They managed to record on phonograph an enormous, as to scale of that time, quantity of examples for traditional Jewish music in different genres: wordless chants (nigunim), instrumental pieces, songs, fragments of synagogal liturgies (hasanut), Jewish folklore theatrical plays (purimshpils).

After 1917 Cabinet of Musical Folklore attached to Institute of Jewish Culture in Kyiv ethnographic section continued traditions of Jewish folklore and ethnography experts whose work was interrupted by the I World War and the revolution. There was created their own independent phonograph archive attached to Cabinet and M. Beregovsky famous Jewish scientist and folklore expert stood at its source. Thanks to his efforts expeditionary works of Cabinet became planned, fixing and decoding of expeditions materials reached high scientific level. Within eyeshot of M. Beregovsky and his colleagues were both large centres of Jewish culture in Ukraine (Kyiv, Odessa) and separate characteristic seats of Jewish life in Podillya and Wolyn, west regions of Ukraine (Galychina) and Jewish agriculture colonies of the south of Ukraine (Kherson region, the Crimea).

The huge value of collection consists in safety of music and textual decodings to phonograph records, scientific comments. During the ethnographic expeditions a great quantity of photos was made.

Enormous intellectual value of this collection was not discovered until our days. Collection studying, including its materials in the scientific turnover is complicated by the fact that its materials are presented on heterogeneous carriers and access to them is limited.

## 2. DEFINITION OF THE RESEARCH PROBLEM

The only way for physical preservation of information stored on the phonograph cylinders, in paper records and on photos is its digital rerecording onto modern carriers. The defects of phonograph cylinders (namely, difficulty with replication of recorded information, low reliability of recorded information storage because of cylinders mechanical fragility and their surface deformation while readout) were obvious including their creators as well. First attempts of information rerecording from phonograph cylinders began with appearance of gramophone records simultaneously.

During the last 25 years there were developed over 20 systems (piezoelectric and magnetoelectric) for qualitative sound reproduction from Edison phonograph cylinders. The database created by Christer Hamp (<http://home5.swipnet.se/~W-56154/phonol>) contains fairly detailed information on the last years projects. The problem of developers of sound reproduction systems from phonograph cylinders consists in development of nondestructive systems of high-quality sound reproduction. This problem solving is complicated by the fact that most phonograph cylinders were already repeatedly reproduced by traditional methods based on gradual deformation of recorded relief. Therefore comparison of various methods used for sound reproduction can be incorrect after a long interval of time.

Optical methods whose noncontacting insures a full preservation and inviolability of recorded information have great potential resources in regard to nondestructive sound reproduction. However, development of methods of sound reproduction from phonograph cylinders is connected with great difficulties which don't enable to obtain qualitative sound due to high noise level connected with optical irregularity of phonograph cylinders surface [1].

We consider the best results can give combination of mechanical and optical methods in which cylinder surface profile is sounded by the elliptical stylus whose shape is close to one of sound recording and size of stylus movement is determined by the optical methods.

Many records in the handwritten part of the collection are made by pencil that also doesn't ensure their long safety: the records gradually die out. The ordinary reprint doesn't enable to save all records nuances. At present, the most suitable way of records preservation is the digital text scan method.

Presentation of phonograms, music records made by the collection collectors themselves and travel records on the same carrier will allow not only to preserve the materials of ethnographic expeditions but to include them in the scientific turnover and to open them for researchers of different countries being interested in this problem as well.

## 3. THE OBTAINED RESULTS

On the first stage we carried out the works on sound rerecording from phonograph cylinders [2].

Process of rerecording from phonograph cylinders onto CDs includes 3 main stages:

- digital pickup and sound track profile storage;
- computer processing of the profile signal;
- creation of CD image and information recording onto CD.

Direct works with phonograph cylinders are carried out on the first stage only. By means of slow rotation and axis supply of the cylinder its unrolling is executed. Meanwhile the sound track profile is traced by stylus of special elliptical shape to which optical element of the measuring interferometer arm is stiffly connected. The oscillations of the optical element correspond with the sound track profile, they are measured with an accuracy of 0,04mm and are recorded in the computer.

For sound reproduction the derivative velocity of sound track profile measurement is calculated. This transformed interferential signal supplied at discretization frequency of 4KHz is converted into sampling frequency of 22 kHz and all further signal computer processing is carried out at this discretization frequency.

The first stage of signal processing is the choice of optimum speed for sound reproduction achieved by changing of sampling step while its constant frequency.

Next signal operating step is the removal of pulsed hindrances and broadband noise caused by the cracks, scratches and other cylinder surface damages while its storage.

The program processing is used for pulsed hindrances (crackling, snubs) removal. Its algorithm is based on nonlinear detector reacting to the speed of signal level change.

Broadband noise is being removed by the program whose operative algorithm is based on the following operations. The spectrum of signal fragment readout from the cylinder in the free of useful signal place is measured programmly on the basis of discrete Fourier transformation. The signal is passed through this filter and the noise component of the signal is weakened.

Thus three forms of reproduced phonogrammes are prepared:

- instrumental sound;
- sound with removed impulse hindrances;
- sound with depressed broadband noise.

Then the CD image is created of these sound files in the computer by the standard methods and information is rerecorded from computer onto CD on the suitable equipment.

In association with employees of Vernadsky National Library of Ukraine we had completely rerecorded the collection of Jewish music folklore. Altogether over 1000 cylinders are rerecorded. Instrumental sound was rerecorded onto CDs after the primary processing included the choice of optimum speed for sound reproduction, removal of defects related to separate sound track damages. The total length of processed material sounding forms about 50 hours.

Parallel with sound reproduction from Edison phonograph cylinders and its rerecording onto CDs we conducted the works on Beregovsky collection catalogue working out. When appeal to the interested cylinder besides its detailed description the researcher can listen to the music composition recorded on the cylinder, get acquainted with originals of the music records. The additional information is available for some cylinders: the enlarged information on performers, on the place of phonogramms recording. Besides textual files this additional information includes video information as well (the converted photos and sketches made during the ethnographic expeditions). The presentation disk contains information on 30 cylinders.

Full information on complete collection will be published in multimedia way during the upcoming year. The collection is expected to include several (10-12) genre CDs.

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#### 5. REFERENCES

1. Asakura T. Et al. Reproduction of sound from old wax phonographic cylinders using the laser-beam reflection method // Proc. Of the IEEE-IECEJ-ASJ International Conference on Acoustics, Speech and Signal Processing. - April 1986. - PP.493-496.
2. Petrov V.V., Onyschenko O.S., Kryuchin A.A., Shanoylo S.M., Ryabokon I.P. Optomechanical method of Edison cylinders sound reproduction // Proc. 102<sup>nd</sup> AES Convevtion - Munich:1997. - March 22-25. - An Audio Eng. Soc. Preprint 4491 (M4).
3. Petrov V.V., Kryuchin A.A., Shanoylo S.M. et al. Optomechanical method of sound reproduction from Edison cylinders // Proc. SPIE. - 1997. - V.3055. - PP.218-224